THE SPIONIDAE OF SOUTH AUSTRALIA (ANNELIDA: POLYCHAETA)

by P. A. Hutchings & S. P. Turvey*

Summary

Hutchings, P. A. & Turvey, S. P. (1984) The Spionidae of South Australia (Annelida: Polychaeta). *Trans. R. Soc. S. Aust.* **108**(1), 1-20, 12 June, 1984.

Five new species of Spionidae, *Aquilaspio pyramidalis, Scolelepis (S.) bifida, Scolelepis (N.) edmondsi, Spio tridentata* and *Boccardia fleckera* are described. Descriptions are given of fourteen previously described species of Spionidae occurring intertidally in South Australia, together with their known geographical range. Two species of *Pseudopolydora* are described only to genus. A Key to all species is provided.

Key Words: Taxonomy, Polychaeta, Spionidae, South Australia, Key.

Introduction

In 1979 one of us (PH) made extensive collections of South Australian polychaetes, concentrating on estuarine and intertidal areas. Although Blake & Kudenov (1978) have recently undertaken a major review of the spionids from SE Australia, we have found an additional five new species. This probably indicates the diversity of the spionids in southern and south eastern Australia, and we suspect that many more species remain to be described.

In addition to describing five new species, we have included a short diagnostic account of each genus and of previously described species occurring in South Australia. Species identified from the key should be checked carefully against the descriptions, in particular the setigers on which setal changes occur and the detail of the setal structure. This is particularly important for non-South Australian material, where other references such as Blake & Kudenov (1978) and Hartmann-Schröder (1979, 1980, 1981) should be consulted.

Materials and Methods

Station data have been coded and tabulated (Table 1) and the codes used in the Material examined section of each species description. Registration numbers of Australian Museum material has been abbreviated to W. plus number. Paratypes have been deposited wherever possible at the Allan Hancock Foundation, Los Angeles (AHF), British Museum (Natural History), London (BMNH) and The National Museum of Natural History, Smithsonian Institution, Washington, D.C. (USNM). Other abbreviations used are as follows: HZM, Zoologisches Institut und Zoologisches Museum der Universität, Hamburg; KM, Zoologisk Museum, Copenhagen; NMV, National Museum of Victoria, Melbourne; SAM, South Australian Museum, Adelaide.

The Australian distribution of each species has been given using Day & Hutchings (1979) checklist and Blake & Kudenov (1978). The localities are arranged geographically from west to east, and along the east coast of Australia from south to north. Additional locality data from subsequent publications are marked with an asterisk.

In general we have only cited major Australian references. Full synonymies are given by Blake & Kudenov (1978) and Day & Hutchings (1979).

We have followed Foster (1971) in accepting the various genera within the *Prionospio* complex which she recognised based mainly on the type of branchiae present. We believe this is a useful division.

Key to the South Australian Spionidae
(after Blake & Kudenov, 1978)

1.	Setiger 5 modified, with specialised setae	2
	Setiger 5 not modified, without specialised setae	11
2. (1)	Branchiae beginning on setiger 2	*Boccardia* 3
	Branchiae beginning on setigers 6–12	5
3. (2)	Prostomium entire	*B. proboscidea*
	Prostomium deeply incised	4
4. (3)	Neurosetal hooded hooks from setiger 7; setiger 5 with simple falcate spines and spines with concave cup containing bluntly conical tooth	*B. ehlersis*
	Neurosetal hooded hooks from setiger 11; setiger 5 with curved falcate smooth spines and brush tipped setae	*B. fleckera* n.sp.

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5. (2) Setiger 5 slightly modified, with prominent parapodia, major spines of 2 types arranged in V or J shaped row ... *Pseudopolydora* 6
Setiger 5 greatly modified with reduced parapodia, and 1 type of spine arranged in curved row ... *Polydora* 9

6. (5) Prostomium entire ... 7
Prostomium deeply incised 8

7. (6) Neurosetal hooded hooks, bidentate from setiger 8 ... *P. paucibranchiata*
Neurosetal hooded hooks, multidentate from setiger 7 ... *Pseudopolydora* sp. 2

8. (6) Modified setae on setiger 5 pennoned and simple spines ... *P. antennata*
Modified setae on setiger 5 falcate pennoned spines ... *Pseudopolydora* sp. 1

9. (5) Hooded hooks without constriction on shaft; setiger 5 with major spines with subterminal boss, companion setae bilimbate ... *P. socialis*
Hooded hooks with constriction on shaft; setiger 5 with setae otherwise ... 10

10. (9) Prostomium weakly incised; setiger 5 with falcate spines with large subterminal flange, companion setae bilimbate ... *P. hoplura*
Prostomium incised with 2 widely separated lobes; setiger 5 with curved spines with prominent subterminal tooth and feathered companion setae ... *P. ligni*

11. (1) Prostomium distally pointed with or without subdistal lateral horns ... 12
Prostomium not distally pointed, with or without distal lateral or frontal horns, broadly rounded or incised on anterior margin ... 15

12. (11) Branchiae fused to dorsal lamellae at least basally, continuing to end of body ... *Scolelepis* 13
Branchiae completely free from dorsal lamellae, present on variable number of anterior setigers, absent posteriorly ... *Aonides oxycephala*

13. (12) Notosetae all capillaries, at least until setiger 93 ... 14
Notosetae initially capillaries, bidentate hooded hooks from setiger 38–56 ... *S. Carunculata*

14. (13) Neurosetal hooded hooks bidentate from setiger 36 ... *S. bifida* n.sp.
Neurosetal hooded hooks tridentate from setiger 43 ... *S. edmondsi* n.sp.

15. (11) Branchiae concentrated in 1–22 anterior setigers, absent posteriorly ... 16
Branchiae present over most of body length ... 20

16. (15) Branchiae all cirriform, 10 pairs ... *Minuspio cirrifera*
Branchiae not all cirriform, 3–4 pairs ... 17

17. (16) Branchiae all pinnate ... *Aquilaspio* 18
Branchiae pinnate and cirriform ... *Prionospio multicristata*

18. (17) Three pairs of branchiae ... *Aquilaspio aucklandica*
Four pairs of branchiae ... 19

19. (18) Rounded neuropodial lamella on setiger 1 ... *Aquilaspio multipinnulata*
Neuropodium of setiger 1 inflated, pyramidal in shape ... *Aquilaspio pyramidalis* n.sp.

20. (15) Branchiae beginning on setiger 1 anteriorly fused to notopodial lamellae, neuropodial hooks from setiger 28 ... *Spio tridentata* n.sp.
Branchiae beginning on setiger 2 stout cirriform completely free from notopodia; neuropodial hooks from setiger 9 ... *Microspio granulata*

Scolelepis (Blainville (emended Pettibone)) Prostomium pointed anteriorly and posteriorly. Peristomium forming hood about prostomium. Branchiae from setiger 2 to near end of body, more or less completely fused to notopodial lamellae at least anteriorly. Neuropodial lamellae uni- or bilobed. Neuropodial hooks present in far posterior or absent. Hooks hooded, entire, bi- to quadridentate.

Scolelepis (Scolelepis) bifida n.sp.
FIG. 1a–g.

Scolelepis lamellicincta Blake & Kudenov, 1978: 176–178, fig. 1a–k (in part).

Holotype: S.A. 09C (W.19283).
Paratypes: 09C, 2 (W.19284), 1 (USNM 074899), 1 (BMNH ZB 1982.76), 32C, 8 (W.19285), 1 (AHF POLY 1383).

Other material examined: Holotype of *Scolelepis lamellicincta* Blake & Kudenov (NMV G102) and Paratype (NMV G2990) Westernport Bay, Vic. (SAM E1577) Elliston, S.A. Holotype of *Pseudonerine antipoda* Augener (KM) Pegasus Bay, Stewart Island, New Zealand.

Description: Holotype posteriorly incomplete, partially broken between setigers 63–64; 59 mm long and 4.2 mm wide at about setiger 40, for a total of 93 setigers. Paratype material all incomplete posteriorly, with following ranges of dimensions: 40 mm long, 2.5 mm wide for 87 setigers, 25 mm long, 2.0 mm wide for 70 setigers; 18 mm long, 1.5 mm

TABLE 1. *Collection data*

Locality, collector and date	Latitude/ longitude (Deg. Min.)	Habitat	Code
Port Augusta. Hutchings, 14.iii.1979	32–30/137–46	Sand on mudflats in front of mangroves, under bridge	01A
Streaky Bay, near caravan park. Hutchings, 13.iii.1979	32–48/134–13	Mussell clumps at mid tide level on mud flats	02A
		Mud flats, *Posidonia*	02B
		Mud sievings, *Posidonia*	02C
		Posidonia and *Zostera* sievings	02D
Streaky Bay, little island on outer margin of inner bay. Hutchings, 13.iii.1979	32–48/134–13	Fauna associated with *Zostera*	03A
		Sands sievings	03B
		Sand sievings, *Posidonia*	03C
		Under boulders	03D
		Posidonia and *Zostera* sievings	03E
		Sand sievings among *Posidonia* and *Zostera*	03F
Speeds Point, Streaky Bay. Hutchings, 14.iii.1979	32–48/134–13	Algal washings	04A
		Zostera sievings	04B
Port Kenny, Venus Bay. Hutchings, 12.iii.1979	33–10/134–41	Mussel clumps at mid-tide level	05A
Venus Bay, village. Hutchings, 12.iii.1979	33–14/134–40	Algal mat on reef, south of village	06A
		Sand sievings	06B
		Fauna on jetty piles	06C
Elliston, reef at southern end of town. Hutchings, 12.iii.1979	33–39/134–53	Under rocks on low tide reef flat	07A
		Algae from low tide reef flat	07B
		Sand sievings at low tide	07C
Elliston, reef just past post-office. Hutchings, 12.iii.1979	33–39/134–53	Algal washings	08A
Elliston, jetty. Hutchings, 12.iii.1979	33–39/134–53	Amongst *Galeolaria* on jetty piles	09A
		Nearby rocks, encrusting algae	09B
		Sand sievings	09C
Kellidie Bay. Hutchings, 11.iii.1979	34–36/135–29	Mussel clumps at mid-tide level	10A
		Zostera and sand sievings	10B
Porter Bay, Port Lincoln, near boat ramp. Hutchings, 10.iii.1979	34–44/135–53	*Zostera* sievings	11A
Torrens Island, Adelaide Power Station. Hutchings, 7.iii.1979	34–47/138–32	Mudflats in front of thermal effluent (up to 42°C)	12A
		Mud flats in front of mangroves	12B
		Mud flats in front of mangroves with patchy *Zostera*	12C
Flinders Cairn, Port Lincoln. Hutchings, 10.iii.1979	34–49/135–47	Sand at low tide level	13A
		Mussell clumps at mid-tide level	13B
Sleaford Mere, Hutchings, 10.iii.1979	34–50/135–45	Mud, salinity 20‰	14A
Sleaford Bay. Hutchings, 10.iii.1979	34–54/135–47	Algae on ocean side of bay	15A
Sellicks Beach, reef to north. Hutchings, 16.iii.1979	35–20/138–27	Algal washings	16A
		Sievings in *Amphibolis*	16B
		Sand sievings	16C
		Sand sievings near *Arenicola*	16D
Rapid Bay, jetty between Normanville, and Second Valley. Hutchings, 8.iii.1979	35–32/138–11	Fauna attached to jetty piles	17A
Victor Harbor, just behind bluff. Hutchings, 16.iii.1979	35–33/138–38	Crevice fauna	18A
		Algal washings	18B
Emu Bay, Kangaroo Island, adjacent to old jetty. Hutchings, 1.iii.1979	35–35/137–31	Coralline algae washings	19A
		Crevice fauna	19B
		Algal washings	19C
		Under rocks beside jetty	19D
		Posidonia sievings	19E
Stokes Bay, Kangaroo Island. Hutchings & Butler, 5.iii.1979	35–37/137–12	Algal washings	20A
		Sand sievings	20B
Stokes Bay, Kangaroo Island. Handley, 4.iii.1976	35–37/137–12	Algae at low-tide level	21A
		Under rocks at low tide level	21B
Bay of Shoals, Kangaroo Island. Hutchings & Edmonds, 1.iii.1979	35–36/137–37	*Zostera* sievings	22A

3 km SW of Cape Rouge. Handley, 7.iii.1978		Sand flats verging into *Posidonia* and *Hormosira*	22B
Bay of Shoals, low-tide. Hoese, iii.1979		*Posidonia*, *Zostera*, mud and sand	22C
Snellings Beach, mouth of Middle River, Kangaroo Island. Hutchings & Butler, 5.iii.1979	35–42/137–06	Algal holdfasts and crevice fauna	23A
		Sand sievings	23B
Penneshaw jetty, Kangaroo Island. Handley, 9.iii.1978	35–43/137–56	In sponges on boom piles at 5 m, and under rocks	24A
Western River Cove, Kangaroo Island. Handley, 3.iii.1978	35–43/136–56	Sheltered rock pool, under rocks and algae	25A
Redbanks, Nepean River, Kangaroo Island. Lock and Yoo, 8.iii.1978	35–44/137–43	Sheltered shallow bay at low level	26A
Muston Point, American River, Kangaroo Island, old wharf. Hutchings, 2.iii.1979	35–47/137–46	Clumps of sponge at 5 m in fast flowing channel with many *Pinna*	27A
		Sand, sponges, and sandy conglomerate rock at 5 m in fast-flowing channel	27B
		Zostera sievings	27C
American River, Kangaroo Island, top of river just below turn-off to Pennington Bay. Hutchings, 3.iii.1978	35–47/137–46	Surface detritus and algae	28A
Pelican Lagoon, south side, Kangaroo Island. Handley, 8.iii.1978	35–40/137–45	Under rocks and *Hormosira* in front of salt marsh, at mid-tide level	29A
Cape du Couedic, Kangaroo Island. Hutchings & Butler, 4.iii.1979	36–03/136–41	Exposed beach, algal holdfasts	30A
		Exposed beach, coralline algae and algal holdfasts	30B
		Exposed beach, coralline algae washings	30C
		Exposed reef, algal holdfasts	30D
		Exposed reef, coralline algae	30E
Harriet River estuary, Vivonne Bay, Kangaroo Island. Yoo and Handley, 2.iii.1978	35–58/137–09	Sievings at low-tide level	31A
Hanson Bay, Kangaroo Island. Hutchings & Butler, 4.iii.1978	36–02/136–51	Algal holdfasts on reef flat	32A
		Closed mouth of South West River, salinity 30‰	32B
		Exposed beach, sand sievings	32C
Cape Domby, near obelisk. Yoo, 2.ii.1978	37–10/139–44	Algae from pool on exposed rock platform.	33A
		Sievings in low *Zostera* patches at low-tide	33B
Cape Northumberland, on west side. Yoo, Loch and Handley, 27.iii.1978	38–04/140–40	Sheltered pools behind exposed rock platform at low tide	34A

wide for 70 setigers; 15 mm long, 2.0 mm wide for 70 setigers; 10 mm long, 1.5 mm wide for 37 setigers; 6 mm long, 2.0 mm wide for 20 setigers; 20 mm long, 2.0 mm wide for 66 setigers; 30 mm long, 2.5 mm wide for 79 setigers and 45 mm long, 2.0 mm wide for 110 segments. Body broadly rectangular in cross-section, broadest in mid-section, tapering anteriorly and posteriorly. Colour pinkish brown in alcohol. Prostomium bulbous anteriorly tapering to acute point; posteriorly forming small, high, attached keel-like caruncle extending to middle of setiger 1 (Fig. 1a); two pairs of eyes arranged in oblique row on each side of base of caruncle, obscured by peristomial hood; occipital tentacle absent. Peristomium forming high lateral hood about posterior part of prostomium, becoming lower anteriorly; palps thick, smooth, tapering progressively with conspicuous basal palpophore or sheath extending to setiger 11 (left)–13 (right). Setiger 1 reduced, with notopodial lamellae small, thick, bluntly triangular, neuropodial lamellae smaller than notopodial, rounded, cup-shaped, but noto- and neurosetae present. Branchiae from setiger 2, thick, cirriform, elongating to reach approximately twice initial length by about setiger 10 then decreasing slightly towards end of fragment, each branchial pair connected across dorsum by narraw ciliated ridge; anterior postsetal notopodial lamellae extend dorsally as membranous borders along lateral margins of branchiae, becoming separate only at far distal extremity (Fig. 1b); branchiae only slightly longer than lamellae giving combined lamellae-branchiae

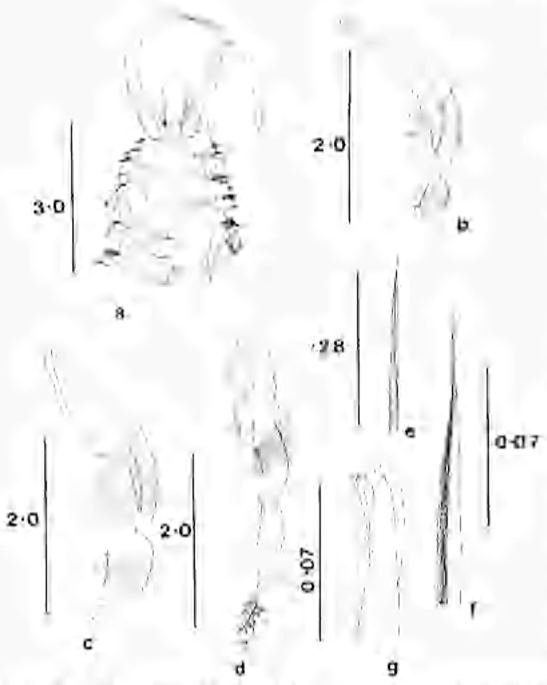

Fig. 1. *Scolelepis* (*S.*) *bifida* n.sp. a. anterior end, dorsal view. b. anterior view of 5th parapodium. c. anterior view of 20th parapodium. d. anterior view of 40th parapodium. e-f. sabre seta at ×25 and ×100 magnification. g. hooded hook. Scales in mm.

appearance of being distally bifid, with small, flattened points (Fig. 1c), from about setiger 30–40 free tips of branchiae become more elongate, digitiform, initially curving around medio-distal margins of lamellae before continuing as free processes (Fig. 1d); lamellae becoming broader and more rounded distally, strongly folded in all but far anterior setigers. Presetal notopodial lamellae low, rounded ridges in anterior setigers, becoming inconspicuous posteriorly, while body wall supporting notosetae simultaneously becoming raised ridge. Postsetal neuropodial lamellae anteriorly semicircular in outline, becoming bi-lobed by setiger 30; ventral neuropodial lobe small, semicircular in profile becoming displaced ventrally behind ventral extremity of neurosetal fascicle; dorsal neuropodial lobe rapidly forming a low, elongate interamal lamella, overlapping with notopodial lamella after a few setigers then becoming progressively separated posteriorly. Presetal neuropodial lamella similar to notopodial. Notosetae all capillaries at least to setiger 93. Anterior notosetae arranged in two broad rows, with those in anterior row stout, broad, generally bilimbate; those in posterior rows longer, narrower but still stout, each seta unilimbate or appearing to be without sheath or wings; both types with shafts with distal fine granulations and transparent limbate processes having faint oblique striations; notosetae reducing to single row at about setiger 30 with broad vertical group of shorter capillaries situated ventrally and narrow horizontal group of long capillaries located dorsally, these two groups becoming variably separated by a narrow space which may include several very short, fine, unsheathed capillaries; capillaries becoming less robust with granulations barely noticeable, in far posterior setigers. Neurosetae anteriorly similar to notosetae except most ventral capillaries developing into a partially separate fascicle of 3–7 sabre setae over first 3–4 setigers (Fig. 1e–f); sabre setae similar to unilimbate capillaries except shorter with shafts coarsely granular distally in posterior setigers; capillaries in posterior neuropodial fascicles gradually replaced by hooded hooks from setiger 36; initially with only 2 hooks, then becoming more numerous forming broad fascicle of 7–10 hooks and 3–5 small bundles of capillaries; capillaries located between hooks in dorsal part of fascicle; hooded hooks worn, bidentate, with shafts greatly thickened in basal region after emergence from body wall (Fig. 1g). Pygidium and other posterior structures missing.

The paratype material exhibits some variation from the holotype including eyes not visible, and palps extending to setiger 11–21; neuropodial lamellae bi-lobed from setiger 23–34; notopodial lamellae variably but noticeably folded at least posteriorly, frequently in all setigers. Hooded hooks in neuropodia from setiger 32–36, 5–10 in number.

Comments: Scolelepis bifida n.sp. belongs to the sub-genus *Scolelepis* as defined by Pettibone (1963). *Scolelepis bifida* n.sp. is similar to *S. squamata* (Müller, 1806) and *S. blakei* Hartmann-Schröder, 1980 in that setiger 1 has notosetae, postsetal neuropodial lamellae are divided posteriorly, and hooded hooks are bidentate. *Scolelepis squamata* differs in that the postsetal notopodial lamellae extend only slightly along the branchiae, the dorsal lobes of the neuropodial lamellae do not form long, low interamal lamellae and the hooded hooks are not basally swollen. *Scolelepis blakei* differs in a similar manner and in addition has a trifid prostomium. Two other species of *Scolelepis*

recently described from Western Australia, *S. (S.) halihalensis* Hartmann-Schröder, 1979 and *S. (S.) kudenovi* Hartmann-Schröder, 1981 can be easily distinguished from *S. bifida* n.sp. by the absence of notosetae on setiger 1 in these two species.

Scolelepis lamellicinta Blake & Kudenov 1978 was described from SE Australia, including S.A. as having unidentate hooded hooks. The types of this species have been re-examined and the hooded hooks are not unidentate but have 1 large tooth plus 2 smaller teeth, almost forming a cusp shaped arrangement. Also in *S. lamellicincta* the postsetal neuropodial lobe becomes a separate entity whereas in *S. bifida* n.sp., this lobe remains attached. One of the paratypes (SAM E1577) was collected from Elliston Jetty, S.A. and has bifid hooded hooks and parapodial structures similar to *S. bifida* n.sp., and is referred to this species. Hartmann-Schröder (1980) described *S. lamellicincta* from Onslow, W.A. and also figures unidentate hooded hooks, and may represent an undescribed species. The type of *Scolelepis antipoda* (Augener) has been examined, however the type consists of numerous small fragments, but the anterior fragment clearly differs from *S. bifida* n. sp. in the shape of the prostomium and the anterior gill structure.

The prostomium of *S. antipoda* is rounded in comparison to *S. bifida* n.sp. in which the prostomium is bulbous and anteriorly tapering to an acute point. The anterior branchiae of *S. antipoda* are cylindrical with a small dorsal terminal lamellae whereas in *S. bifida* n.sp. the branchiae are simple and cylindrical.

Etymology: The specific name *bifida* refers to the bi-lobed nature of the postsetal neuropodial lamella from middle setigers onwards.
Australian distribution: S.A. (Elliston).
Habitat: Sandy substrates.

Scolelepis (Scolelepis) carunculata Blake & Kudenov

Scolelepis carunculata Blake & Kudenov 1978: 178–180, fig. 2a–i.

Material examined: S.A. 06B, 4 (W.19313), 07C, 2 (W.19308), 16D, 3 (W.19309), 19E, 4 (W.19312), 20B, 3 (W.19311), 23B, 5 (W.19310).

Description: Size range of entire specimens of 66–75 setigers; 16–20 mm long, 1.0–1.4 mm wide; posteriorly incomplete specimens up to 3.0 mm wide. Prostomium slightly fusiform pointed anteriorly and posteriorly; posterior part of prostomium free of dorsum, forming caruncle frequently elevated, extending to posterior margin of setiger 2. Setiger 1 with postsetal notopodial lamellae and notosetae present. Notopodial lamellae fused to branchiae except distally in anterior setigers, becoming more separated posteriorly. Neuropodial postsetal lamellae single lobed anteriorly, becoming bilobed at setiger 24–37. Anterior notosetae all capillaries, bidentate hooded hooks and capillaries from setiger 38–56. Anterior neurosetae all capillaries with inconspicuous sabre setae from setiger 3, not noticeably thicker than typical capillaries; bidentate hooded hooks from setiger 31–46, with earlier occurrence in smaller specimens. Pygidium with ventral cushion and low rounded dorsal lobe with single low lateral lobe on each side.

Comments: Our material agrees closely with the original description of Blake & Kudenov (1978). Variations in distribution of hooded hooks and bilobed neuropodial lamellae are greater than previously recorded. This is the first record of the species from South Australia.

Australian distribution: W.A. (Safety Bay*). S.A. (Venus Bay*, Elliston*, Sellicks Beach*, Kangaroo Isl.). Vic. (Port Phillip Bay, Westernport Bay), N.S.W. (Belmont Beach), Qld (Moreton Bay).

Habitat: Mud and sand flats.

Scolelepis (Nerinides) edmondsi n.sp.
FIG. 2a–e.

Holotype: South Australia, 09C (W.19394).
Paratypes: 09C, 2 (AHF POLY 1384), 09C, 2 (USNM 074900), 09C, 2 (BMNH ZB 1982: 77–78), 09c, 6 (W.19395), 23B 1 (W.19396).

Description: Holotype, 25 mm long, 1 mm wide for 98 setigers. Paratypes range in size from 12–14 mm long, 0.8–1 mm wide for 60–65 setigers. All type material posteriorly incomplete. Prostomium acutely pointed, with 2 pairs small eyes: inner pair eliptical hidden by raised elevated caruncle attached to dorsum; caruncle with pronounced dorsal swelling; occipital tentacle absent. Peristomium forming ventral ruffle around prostomium; palps with swollen palpostyle, extending posteriorly to setigers 6–7. Setiger 1 with digitiform notopodial lobe and small globular neuropodial lobe; noto- and neurosetae present (Fig. 2a). Branchiae present from setiger 2, attached to notopodial lamellae basally, with free portion of branchia same length

as lamella; branchiae with very prominent blood vessel running along anterior margin; branchiae increasing in size posteriorly, rapidly becoming much longer than the notopodial lamellae. Notopodial lamellae elongating over sequential anterior setigers (Fig. 2b) forming narrow rectangular lobe, with development of interamal cirri (Fig. 2c); in middle and posterior setigers notopodial lamellae reduced to form elongated triangular lobe and by setiger 55 (Fig. 2d), becoming bilobed in far posterior setigers. Interamal cirri from setiger 31, becoming triangular in shape and greater in size than neuropodial lamellae, continuing on all subsequent setigers. Neuropodial lamellae initially semi-circular, gradually becoming more elongate; then dividing by setiger 29 to form interamal cirrus; ventral lobe and interamal cirrus initially equal triangular lobes, interamal cirrus subsequently becoming larger; in far posterior segments neuropodial lobe displaced ventrally but remaining undivided. Large intersegmental oval glandular creamy white patches present between neuropodia and interamal cirri. Well developed dorsal ridges present from setiger 2 to end of fragment, low in height.

Notosetae all capillaries, with most elongate setae from setiger 55; as none of the material examined is complete, the apparent lack of notopodial hooded hooks cannot be confirmed, if they occur it is later than setiger 98. Neurosetae initially capillaries; tridentate hooded hooks from setiger 43 mostly replacing capillaries neurosetae dominated by hooks and 1/2 capillaries. Hooded hooks tridentate with pair of stout denticles surmounting main fang (Fig. 2e).

Comments: Scolelepis edmondsi n.sp. belongs to the sub-genus *Nerinides* according to Pettibone (1963). Pettibone described all the species which she placed in the sub genus and *S. edmondsi* n.sp. can be distinguished from all these species by the presence of notosetae on setiger 1 and the commencement of tridentate neurosetal hooks on setiger 36–44. Since that revision occurred several additional species have been described from Australia. *Scolelepis (N.) vexillatus* (Hutchings & Rainer, 1979) which is characterised by posterior segments with a lamellar extension of the branchiae. Blake & Kudenov (1978) described *S. (N.) towra*, *S. (N.) precirriseta* and *S. (N.) victoriensis* from S.E. Australia, two of these lack notosetae on setiger 1, and all have hooks beginning very much earlier than in *S. (N.) edmondsi* n.sp.

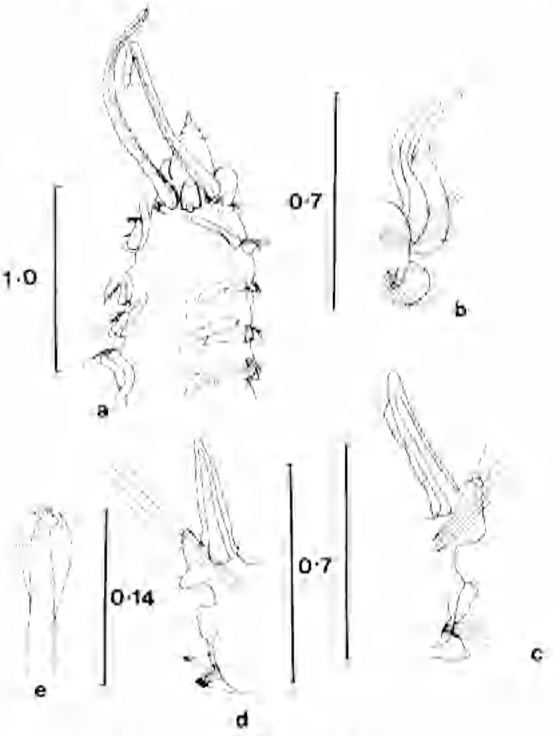

Fig. 2. *Scolelepis (N.) edmondsi* n.sp. a. anterior end, dorsal view. b. anterior view of the parapodium. c. anterior view of 40th parapodium. d. posterior view of 60th parapodium. e. neuropodial hooded hook. Scales in mm.

Etymology: This species is named after Dr Stan Edmonds who helped and largely made possible the field trip undertaken by one of the authors (PAH) during which the material forming the basis of this paper was collected.

Australian distribution: S.A. (Elliston, Snellings Beach).

Habitat: Encrusting algae and algal holdfasts.

Aonides Claparède (after Pettibone)

Prostomium acutely conical; peristomium more or less fused with prostomium. Branchiae from setiger 2, confined to anterior region of body, not fused to dorsal lamellae. Hooded hooks bi- or tridentate, in both noto- and neuropodia. Pygidium with anal cirri.

Type species *Nerine oxycephala* Sars

Aonides oxycephala (Sars)

Nerine oxycephala Sars, 1862: 64.

Aonides oxycephala. — Poore *et al.*, 1975: 30. — Ramos, 1976: 11–20, text-figs 1–2 (for synonymy). — Blake & Kudenov, 1978: 189–191.

Material examined: S.A. 19E, 1 (W.19314).

Description: A single specimen incomplete with 66 setigers, measuring 11.0 mm long, 0.7 mm wide. Prostomium conical, with occipital tentacle present, caruncle absent. Eyes not visible. Setiger 1 with noto- and neuropodial lamellae reduced, noto- and neurosetae present. Branchiae stout, cirriform, on setigers 2–18. Postsetal notopodial lamellae dorsally elevated and pointed in anterior setigers, becoming rounded posteriorly, postsetal neuropodial lamellae small, roughly triangular. All anterior setae capillaries; bidentate hooded hooks in notopodia from setiger 22–24; in neuropodia from setiger 22; posterior neuropodia with ventrally reflexed capillaries which gradually become stouter posteriorly and resemble sabre setae.

Comments: The number of branchiae and setigers on which noto- and neuropodial hooded hooks appear in our specimen are well within the wide ranges given by Ramos (1976) for this species, and other characteristics are in close agreement. First record from South Australia.

Australian distribution: S.A. (Emu Bay, Kangaroo Island*), Vic. (Port Phillip Bay), N.S.W. (Merimbula, Jervis Bay*, Port Hacking*, Botany Bay*).

Habitat: Posidonia seagrass beds.

Aquilaspio Foster

Prostomium subtriangular; with anterior border rounded or sometimes extending slightly laterally, continuing posteriorly as more or less developed posterior keel or caruncle. Peristomium surrounding prostomium as hood, developed to varying degrees. Branchiae, two to four pairs all pinnate, from setiger 2. Anterior setae all capillaries; tridentate or multidentate hooded hooks present in posterior setigers of neuro- and notopodia. Pygidium with anal cirri.

Type species *Prionospio sexoculata* Augener

Aquilaspio aucklandica (Augener)

Prionospio aucklandica Augener, 1924: 69–70, text-fig. 24, 1926: 158–159, fig. 1.

Aquilaspio aucklandica. Foster, 1971: 105–106, Hutchings and Rainer, 1979: 763.

Prionospio (Aquilaspio) aucklandica. Blake & Kudenov, 1978: 221–222, text-fig. 25b–g.

Material examined: S.A. 01A, 2 (W.19318), 12C, 5, (W.19315), 16C, 61 (W.19320), 19A, 1 (W.19317), 19E, 3 (W.19316), 33B, 21 (W.19319).

Description: Size range: 6.5–26 mm long, 0.4–0.8 mm wide for 50–113 setigers; anterior fragments of larger specimens present up to 1.1 mm width. Prostomium anteriorly rounded with minor irregularities; caruncle high, keel-like, extending to posterior margin of setiger 1. Peristomium dorsally fused to setiger 1, forming low lateral wings about prostomium at base of caruncle; palps thick, crenulate, extending to setiger 9–15. Branchiae 3 pairs, on setigers 2–4; each pair densely pinnate, similar in length in large specimens, but subsequent pairs decreasing in length in small specimens with pinnules becoming sparse and fewer, occasionally disappearing by third pair. Setiger 1 with reduced rounded noto- and neuropodial lamellae; notosetae lacking. Notopodial lamellae becoming larger, elongated dorsally pointed and medially curved over setigers 2–4, then becoming rounded and decreasing in size posteriorly. Neuropodial lamellae similar throughout in size to notopodial; generally rounded in shape except sharp triangular ventrally directed projection in setiger 2. Anterior setae in both noto- and neuropodial all capillaries, sheathed, distally granular, becoming finer posteriorly; hooded hooks from setiger 25–33 in notopodia, 15–18 in neuropodia with about 5 tiers of apical teeth above main fang, primary hood inflated, secondary hood distinct; ventral sabre setae in neuropodia from setiger 10–11, each stout, sheathed, distally granular, tapering abruptly to filamentous tip; smaller individuals with sabre setae from setiger 10 and hooded hooks in the notopodia from setiger 25 and in the neuropodia from setiger 15. Pygidium with long cirrus dorsomedially and 2 stout papillae.

Comments: Size-dependent variations in branchiae and setal patterns have not been noted previously. Blake & Kudenov (1978, p. 222), state that a low dorsal crest is present on setiger 7. This was not indicated by Augener (1924) and was not observed on our material, although the anterior margins of post-branchial setigers were slightly raised to form low dorsal ridges. This is the first record of this species from South Australia.

Australian distribution: S.A. (Port Augusta*, Torrens Island*, Sellicks Beach*, Emu Bay*, Cape Domby*), Vic. (Port Phillip Bay, Westernport Bay), N.S.W. (Merimbula, Botany Bay, Careel Bay*, Wallis Lake).

Habitat: Intertidal and sub-tidal sediments including seagrass beds, among coralline algae.

Aquilaspio multipinnulata (Blake & Kudenov) new comb.

Prionospio (Aquilaspio) multipinnulata Blake & Kudenov, 1978: 219–221, text-fig. 24a–f.

Material examined: S.A. 04B, 2 (W.19324). 07B 1 (W.19321). 11A, 6 (W.19329). 12B, 1 (W. 19326). 13A, 4 (W.19330). 19D, 5 (W.19327). 19E, 1 (W.19323). 21B, 1 (W.19328). 22A, 2 (W.19322). 27C, 12 (W.19325). Onkaparinga Estuary, 1 (W.6071) coll. Shepherd. N.S.W., Merimbula (W.11736), identified by Blake & Kudenov.

Description: A single entire specimen (W. 19326) measures 54 mm long, 1.6 mm wide for 137 setigers; posteriorly incomplete specimens of 0.9–1.8 mm width. Prostomium broadly rounded anteriorly with high, keel-like caruncle extending to posterior margin of setiger 1; two-three pairs of eyes present. Peristomium dorsally fused to setiger 1, together with notopodial lamella forming low but distinct lateral wings surrounding prostomium. Four pairs of densely pinnate branchiae from setiger 2. Setiger 1 with notosetae reduced to small bundle at base of notopodial lamella, neurosetae normal in size. Notopodial lamellae becoming more elongate dorsally, pointed and medially hooked over setigers 1–4 then becoming rounded, laterally directed, decreasing in size posteriorly; in some anterior setigers notopodial lamellae extending across dorsum to form very low, rounded, barely-raised dorsal ridges from about setiger 10, occasionally absent. Neuropodial lamellae showing similar to notopodial size variations, generally rounded throughout except for sharp ventrally directed triangular projection in setiger 2 and laterally pointed lamellae in setiger 3. Anterior noto- and neurosetae all capillaries, sheathed, distally granular, becoming finer with less distinct sheaths posteriorly; hooded hooks from setiger 26–39 in notopodia, 20–24 in neuropodia, hooks with 4–5 tiers of apical teeth above main fang, secondary hood distinct; one, or rarely 2 ventral sabre setae in neuropodia from setiger 10–11, each sheathed in anterior setigers, distally granular, tapering rapidly to filamentous tip. Pygidium with long dorsomedial cirrus and a pair of stout lateral papillae.

Comments: Our material agrees closely with the description of Blake & Kudenov (1978) except for fewer pairs of eyes and slightly more posterior appearance of neuropodial hooded hooks. Variability in the setiger at which types of setae first appear was not recorded by Blake & Kudenov. The pygidium and the occasional, variable presence of low dorsal crests have not been described previously. This is the first record of the species from South Australia.

Australian distribution: S.A. (widespread*), Vic. (Port Phillip Bay), N.S.W. (Merimbula, Wagonga R.*).

Habitat: Among seagrasses and algae, in mud, under rocks.

Aquilaspio pyramidalis n.sp.
FIG. 3a–e.

Holotype: South Australia, 20A (W.194024).

Paratypes: 04A, 16 (W.194026). 04A, 1 (W. 194025). 07A, 9 (W.194029). 07B, 31 (W.194030). 08A, 14 (USNM 074898). 18A, 12 (AHF POLY 1382). 18B, 10 (BMNH ZB. 1982.66–75). 19A, 23 (W.194031). 20A, 2 (W.194027), 21A, 28 (W.194028). 27B, 4 (W.194032). 33B, 2 (W. 194033).

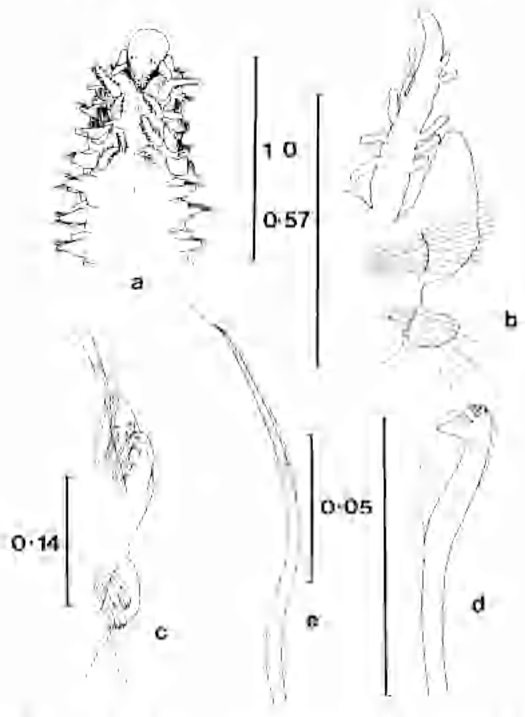

Fig. 3. *Aquilaspio pyramidalis* n.sp. a. anterior end, dorsal view (Paratype W.194026). b. anterior view of 4th parapodium. c. anterior view of 52nd parapodium. d. notopodial hooded hook from 52nd parapodium. e. sabre seta. Scales in mm.

Description: Holotype, 10 mm long, 0.7 mm wide for 71 setigers. Paratypes range in size from 24 setigers, 2.0 mm length, 0.25 mm width to 81 setigers, 18.5 mm length, 0.85 mm width. Prostomium broadly rounded anteriorly with low, thick caruncle extending to posterior margin of setiger 1; two pairs of eyes arranged in oblique line on either side. Peristomium fused with notopodial lamellae of setiger 1 to form high lateral wings about posterior margins of prostomium and base of caruncle, extending anteriorly as low lateral wings close to sides of prostomium (Fig. 3a); palps lost. Four pairs of sparsely pinnate branchiae on setigers 2–5, becoming shorter posteriorly with few pinnules. Postsetal notopodial lamellae well-developed and rounded in setiger 1, increasing in size and becoming more dorsally elongate, pointed and medially hooked up to setiger 4 then becoming rounded, laterally directed, decreasing in size posteriorly, terminating laterally on dorsum and not extending to form dorsal crests (Fig. 3b). Neuropodium of setiger 1 inflated, pyramidal in form with postsetal lamellae barely developed as small ridge on apex; subsequent neuropodia normal; anterior setigers with well-developed postsetal lamellae showing similar variation in size to notopodial lamellae; all rounded except bluntly triangular dorsally in setigers 2 and 3. Postsetal lamellae of both noto- and neuropodia reduced to low, thick ridges, in those setigers bearing hooded hooks, with hooks often partly surrounded by folds in body wall (Fig. 3c). Presetal lamellae present anteriorly in both noto- and neuropodia as low ridges. Anterior noto- and neurosetae all capillaries arranged in narrow bundles in setiger 1, thereafter capillaries in 2 broad, disorganised, partially separated groups in both noto- and neuropodia reduced to single fascicle by middle setigers and 1 or 2 setae posteriorly; capillaries of anterior setigers stout, sheathed, distally granular, frequently appearing unilimbate, becoming slender posteriorly with inconspicuous sheaths; 0–3 hooded hooks from setiger 26 (left)–27 (right) in notopodia, 0–5 from setiger 11 in neuropodia, with apical teeth in 5–6 tiers above main fang, two teeth per tier, primary hood broadly inflated, secondary hood not visible (Fig. 3d); single ventral sabre seta present in each neuropodium, from setiger 12, each stout, densely granular distally, tapering rapidly to filamentous tip, sheath well developed anteriorly but diminishing posteriorly (Fig. 3e). Pygidium with a single, long dorsomedial cirrus and 2 stout lateral papillae. Coelom loosely packed with eggs of about 70 μm diameter. The paratype material exhibits some variation from the holotype. Some have 4 pairs of eyes; palps stout extending to setiger 4–10. Number of branchiae becoming reduced in small specimens with a corresponding reduction in number of pinnules frequently to only 1, 2 or 0 in more posterior branchiae. Smallest specimen with only a single pair of branchiae on setiger 2 and completely lacking pinnules, suggesting that number of gills and pinnules increase with increasing size and presumably age. Notopodia with 0–2 hooded hooks from setiger 25–30 in most specimens increasing to as many as 5 posteriorly. Neuropodia with 0–5 hooded hooks generally from setiger 11, rarely from setiger 12. One or rarely 2 sabre setae generally from setiger 13, occasionally from setiger 11–16. Very small specimens with noto- and neuropodial hooded hooks and neuropodial sabre setae from as early as setiger 18, 8 and 10 respectively. The smallest specimens can only be assigned to *A. pyramidalis* n.sp. because of the wide range of sized material available and this permits the sequential development of features to be followed with increasing size.

Discussion: Aquilaspio pyramidalis n.sp. is similar to *A. multipinnulata* (Blake & Kudenov, 1978), *A. peruana* (Hartmann-Schröder, 1962), *A. tenuis* (Verrill, 1880), *A. terelensis* (Gibbs, 1971) and *A. treadwelli* (Hartman, 1951) in possessing four pairs of pinnate branchiae on setigers 2–5. It may be distinguished from all of these species by the setigers on which neuropodial hooded hooks and sabre setae first appear and by the form of the neuropodium of setiger 1.

Etymology: The specific name refers to the form of the neuropodium of setiger 1.

Australian distribution: South Australia (widespread).

Habitat: Intertidally among algae, seagrasses and under rocks, subtidally among rocks and sponges.

Minuspio Foster

Prostomium subtriangular, anteriorly rounded, blunt or inflated, extending posteriorly as a more or less well-developed caruncle. Peristomium forming a hood surrounding prostomium, variously developed.

Branchiae all cirriform, from setiger 2, varying from 4–40 pairs. Anterior setae all capillaries. Hooded hooks in posterior noto- and neuropodia, bidentate to multidentate. Pygidium with anal cirri.

Type species *Prionospio cirrifera* Wirén

Minuspio cirrifera Wirén

Prionospio (?) *cirrifera* Wirén, 1883: 409,

Minuspio cirrifera. Foster, 1971: 108–112, figs 262-275 (for synonymy).

Prionospio (*Minuspio*) *cirrifera*. Blake & Kudenov, 1978: 222–224, text-fig. 25a (for synonymy).

Material examined: S.A. 02B, 1 (W.19302).

Description: Posteriorly incomplete specimen of 61 setigers, measuring 15 mm long, 0.6 mm wide. Prostomium bluntly rounded, caruncle extending to posterior margin of setiger 1. Peristomium forming low lateral wings partly enclosing prostomium; palps slender, extending to setiger 8. Ten pairs of branchiae from setiger 2, all long, cirriform. Setiger 1 reduced with postsetal notopodial lamella larger than neuropodial but both small, noto- and neurosetae present. Postsetal notopodial lamellae increasing in size and becoming more dorsally pointed to setiger 8 then gradually becoming smaller, rounder, more laterally directed, forming low dorsal crests from setiger 12, decreasing posteriorly to setiger 20 then absent. Postsetal neuropodial lamellae small, rounded lateral flaps, with those of setigers 2–3 having slightly dorsal point. Presetal lamellae smaller, rounded. Anterior setae all sheathed distally granular capillaries; setae becoming finer posteriorly. Hooded hooks from setiger 49 in notopodia, 19 in neuropodia, with apical teeth arranged in 3–4 tiers above main fang; secondary hood distinct. A single sabre setae in neuropodium from setiger 16.

Comments: Foster (1971, p. 110) states that if the hooded hooks of *M. cirrifera* have a secondary hood, then "it is extremely closely applied to the hook and is barely distinguishable (fig. 273)". The hook is illustrated as having a secondary hood which is quite distinct below the main fang, a condition identical to that in our specimen. Notopodial hooded hooks appear slightly later in our specimen than indicated by Foster (1971) and Blake & Kudenov (1978) and the caruncle is slightly shorter than described by the latter authors. None of these authors indicate the presence of sabre setae in their texts, although they are illustrated by Foster (1971, fig. 269). Otherwise our specimen is in close agreement with both descriptions. This is the first record of the species from South Australia.

Australian distribution: S.A. (Streaky Bay*), Vic. (Port Phillip Bay, Gippsland Lakes), N.S.W. (widespread), Qld (Deception Bay)

Habitat: Seagrass beds, mud, sand.

Prionospio Malmgren

Prostomium, with anterior margin incised or rounded, without frontal horns, caruncle variously developed. Peristomium fused in varying amounts with setiger 1 often forming low lateral wings. Setiger 1 with reduced parapodia, notopodia on branchiferous segments enlarged, post-branchial notopodia becoming smaller, inconspicuous; dorsal folds or crests present or absent on postbranchial segments rarely on branchiferous segments. Branchiae cirriform and pinnate, limited to anterior setigers. Anterior setae all capillaries, hooded hooks in posterior noto- and neuropodia; hooks, bi, tri or multidentate, inferior sabre setae present. Pygidium with 1 long medial cirrus and 2 short ventrolateral cirri or thickened lobes.

Type species *Prionospio steenstrupi* Malmgren.

Prionospio multicristata Hutchings & Rainer

Prionospio multicristata Hutchings & Rainer, 1979: 768–771, text, fig. 5a–i.

Material examined: S.A. 02B, 1 (W.194023). 11A, 1 (W.194022). 13A, 2 (W.194021). N.S.W. Careel Bay, *Posidonia* (Holotype W.8286).

Description: A single entire specimen (W. 194021) of 77 setigers measures 12.5 mm long, 0.75 mm wide; posteriorly incomplete specimens of 0.5–1.6 mm wide. Prostomium broadly rounded anteriorly, tapering rapidly to narrow caruncle extending to posterior margin of setiger 4. Two pairs of eyes, anterior pair small lateral; posterior pair larger, comma shaped. Peristomium forming low-lateral wings close about prostomium. Four pairs of branchiae, on setigers 2–5. First and fourth pairs long, thick, densely pinnate over basal 2/3, distally bare; second and third pairs short, stout, cirriform. Setiger 1 with notopodial and neuropodial lamellae slightly reduced, both noto- and neurosetae present. Notopodial lamellae becoming larger and more dorsally pointed on setigers 2–6, then rounded and decreasing gradually in size posteriorly; each pair joined across dorsum to form high

crest from setiger 7, decreasing posteriorly to become medially separated at setiger 24–31, then absent. Neuropodial lamellae showing similar variation in size to notopodial, rounded except with sharp triangular downwards projection in setiger 2. Anterior noto- and neurosetae all sheathed; capillaries, densely granular distally, in one specimen (W.194022) sheaths of many anterior capillaries also densely granular, intensely gold in colour; capillaries becoming more slender with sheaths reduced posteriorly. Hooded hooks from setiger 27–31 in notopodia, 14–18 in neuropodia with 4–5 tiers of apical teeth above main fang, secondary hood distinct. One or rarely 2 ventral sabre setae in neuropodia from setiger 10, each stout, sheathed, distally granular, tapering abruptly to filamentous tip. Pygidium with long, filiform cirrus dorsomedially and two stout lateral papillae.

Comments: The only substantial difference between our material and that of Hutchings & Rainer (1979) is the earlier appearance of notopodial hooks. This is probably due to the smaller size of our specimens. The pygidium of one specimen was intact and there was some variability in the setiger at which hooded hooks first appeared. Neither of these features have been described previously. This is the first record of the species from South Australia.

Australian distribution: W.A. (Cervantes*), S.A. (Streaky Bay*, Port Lincoln*), N.S.W. (Merimbula*, Port Hacking*, Careel Bay), Qld (Calliope R.*).

Habitat: Sand, seagrass beds.

Spio Fabricius

Prostomium anteriorly rounded or incised, frontal horns lacking; eyes present or absent. Branchiae from setiger 1 continuing throughout body, sometimes partially fused to dorsal lamellae in anterior setigers, free posteriorly. Notosetae all capillaries, neurosetae including capillaries, hooded hooks and sabre setae. Pygidium with anal cirri.

Type species *Nereis filicornis* Müller.

Spio tridentata n.sp.
FIG. 4a–d

Holotype: South Australia, 21B, (W.194019).

Other material examined: Spio pacifica N.S.W., Towra Point, Botany Bay, St 329 *Halophila*, 13 *Paratypes* (W.13029) coll. N.S.W. State Fisheries ld. Blake & Kudenov.

Description: Body robust, broadly rectangular in cross-section. Colour pink. Posteriorly incomplete fragment of 57 setigers, 18 mm long and 1.9 mm wide at setiger 25. Prostomium broad, blunt, anterior margin almost truncate with faint medial indentation; without lateral wings; eyes not visible, caruncle broad, posteriorly rounded, extending to posterior margin of setiger 1 (Fig. 4a). Nuchal organs not visible, but tissue damaged in that region. Peristomium broad, not forming lateral wings about prostomium. Branchiae thick, cirriform, distally rounded, well developed on setiger 1, increasing gradually in size over first few setigers to attain a twice initial length by setiger 6–8 (Fig. 4b) then decreasing slightly over remaining setigers (Fig. 4c). Setiger 1 with noto- and neuropodial setae and lamellae. Subsequent parapodial lamellae all thick, inflated. Postsetal notopodial lamellae rounded, extending dorsally and fused, except for small dorsal extremity, to lateral margins of branchiae, increasing in size over first few setigers; presetal notopodial lamellae low, rounded, much smaller than postsetal lamellae anteriorly, becoming larger posteriorly but not extending more than half way to edge of postsetal lamellae. Postsetal neuropodial lamellae semicircular in profile and initially smaller than notopodial, attaining similar size by setiger 15–16 then increasing further to become somewhat larger posteriorly; presetal neuropodial lamellae low, rounded, much smaller than postsetal in anterior then enlarging laterally to reach almost as far as postsetal in posterior setigers. Notosetae all capillaries, anteriorly arranged in two broad, parallel rows with a smaller third group dorso-posteriorly. The two major rows then coalescing in middle setigers and remaining as single row posteriorly. Anterior neurosetae all capillaries in two broad rows, posterior row replaced from setiger 28 (left)–29 (right) by a single, similarly broad row of 6–11 hooded hooks with an additional, ventrally-reflexed group of 4–5 sabre setae. All capillaries sheathed, those in the anterior of the two major rows of both parapodial rami with shafts distally granular, those in posterior rows non-granular; capillary sheaths never granular; with dorsal granular capillaries in both parapodial rami frequently appearing unilimbate. Neuropodial hooded hooks tridentate with large, pointed main fang surmounted by 2 stout apical teeth decreasing successively in size (Fig. 4d). Pri-

mary hood granular, completely enclosing teeth fine but clearly visible secondary hood. Sabre setae unilimbate with shafts finely granular distally, tapering gradually to a fine tip. Pygidium and posterior setigers lost.

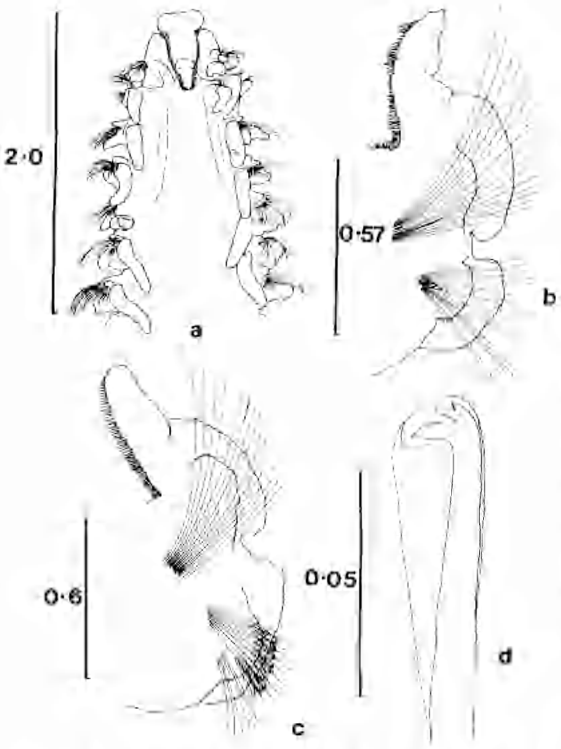

Fig. 4. *Spio tridentata* n.sp. a, anterior end, dorsal view; b, anterior view of 6th parapodium; c, anterior view of 30th parapodium; d, hooded hook.

Comments: Spio tridentata n.sp. is similar to *S. cirrifera* (Banse & Hobson, 1968), *S. limicola* Verrill, 1880 (after Holmquist, 1967), *S. pacifica* Blake & Kudenov, 1978 and *S. pettiboneae* Foster, 1971 in possessing tridentate hooded hooks. It differs from all of these species in the much later appearance of the hooks and the almost complete fusion of branchiae and notopodial lamellae in at least anterior and middle setigers. Further differences include the conspicuous, triangular presetal notopodial lamellae of *S. pettiboneae*, the presetal notopodial cirrus in anterior setigers and the dorsally bilobed prostomium of *S. cirrifera* and the bilobed caruncle, partially hooded sabre setae and granular-sheathed capillaries of *S. pacifica*.

Etymology: the specific name refers to the tridentate hooded hooks.

Australian distribution: S.A. (Stokes Bay, Kangaroo Island).

Habitat: Under rocks at low tide level.

Microspio Mesnil (following Blake & Kudenov)

Prostomium anteriorly rounded to bilobed, without frontal horns; eyes present or absent; occipital tentacle present or absent. Branchiae from setiger 2, notosetae only capillary; neurosetae including capillaries, hooded hooks and sabre setae. Pygidium with anal cirri.

Type species *Spio mecznikowianus* Claparède.

Microspio granulata Blake & Kudenov

Microspio granulata Blake & Kudenov, 1978: 232, figs 30–31.

Material examined: S.A. 02A, 1 (W.19303). 03B, 13 (W.19306). 03C, 1 (W.19304). 03E, 8 (W. 19305). 03F, 2 (W.19307).

Description: Size range of entire specimens of 27–40 setigers, 3.2–11 mm long, 0.5–1.1 mm wide; posteriorly incomplete specimens up to 1.6 mm wide. Prostomium bilobed, deeply incised; caruncle extending to setiger 2 with prominent pointed or rounded occipital papilla; high transverse ciliated ridge behind caruncle enclosed laterally and posteriorly by curved nuchal grooves; similar ridge on each succeeding setiger; two pairs of eyes in oblique series; palps stout, basally inflated, extending to setiger 10–14. Branchiae stout, cirriform, from setiger 2 to all but last few setigers. Setiger 1, reduced without notosetae, noto- and neuropodial lamellae small. Postsetal notopodial lamellae of most setigers small, rounded, dorsally directed; bluntly pointed dorsally in far anterior setigers; becoming elongate and tongue-like in far posterior setiger. Postsetal neuropodial lamellae small, rounded, decreasing posteriorly. Presetal lamellae in both rami smaller, low, rounded. Notosetae all capillaries. Neurosetae with capillaries anteriorly tridentate hooded hooks from setiger 9; a single sabre setae ventrally from setiger 14–17. Pygidium with 4 short, stout anal cirri dorsal pair slightly longer and more pointed than ventral pair.

Comments: Our material agrees closely with the description of Blake & Kudenov (1978). The pygidium and parapodial lamellae of far posterior setigers have not been previously

described. This is the first record outside the type locality.

Australian distribution: S.A. (Streaky Bay*), N.S.W. (Botany Bay).

Habitat: Among mussels, seagrasses, in sand.

Boccardia Carazzi, emended Blake & Kudenov

Prostomium rounded or divided, extending posteriorly as caruncle. Setiger 1 with or without notosetae. Setiger 5 modified with 2 types of major spines, companion setae absent. Bidentate hooded hooks from setigers 7–11. Posterior notopodial spines present or absent. Branchiae from setiger 2, absent setiger 5, present on following variable number of setigers. Pygidium disk like with or without separate lobes or reduced to small lobes or cuffs.

Comment: Boccardia fleckera n.sp. has hooded hooks from setiger 11. The generic definition is revised here to accommodate that species.

Type species *Polydora polybranchia* Haswell.

Boccardia chilensis Blake & Woodwick

Boccardia chilensis Blake & Woodwick 1971: 36, Blake & Kudenov, 1978: 238–240, fig. 33d–e.

Material examined: S.A., 06A, many (W.19295). Coorong (W.19208) coll. M. Geddes.

Description: Prostomium deeply divided on anterior margin. Setiger 1 with long notosetae. Setiger 5 with spines of 2 types, simple falcate spines and spines with expanded concave cup containing bluntly conical tooth; bidentate hooded hooks from setiger 7. Branchiae from setiger 2. Pygidium a fleshy pad.

Comments: Our material agrees well with previous descriptions except that in the South Australian material, the occipital tentacle is absent. First record from South Australia.

Australian distribution: S.A. (Venus Bay*, Coorong*), W.A. (Bunbury, Leschenault Inlet*), Vic. (Port Phillip Bay), N.S.W. (widespread) and Macquarie Island.

Habitat: In amongst algal matt.

Boccardia fleckera n.sp.
FIG. 5a–f.

Holotype: South Australia 30D, 1 (W.194020).

Description Posteriorly incomplete, 23 setigers measuring 4 mm long and 0.5 mm wide. Robust body, speckled with brown flecks of pigment, concentrated posteriorly on both ventral and dorsal surfaces. Prostomium deeply incised, with 2 pairs of spherical eyes; caruncle present, extending to middle of setiger 2 with short occipital present. Palps with swollen bases, extending to setiger 10 (Fig. 5a). Setiger 1 with large prominent notopodial lamellae and notosetae; subsequent parapodia with blunt triangular notopodial lobe, and larger truncate triangular neuropodial lobe (Fig. 5b–c). Branchiae, stumpy, stout from setiger 2–4 and 6 onwards, attached to base of notopodial lobe, but longer than parapodial lobes.

Setiger 5 heavily modified, notopodial lamellae absent, small globular neuropodial lobe, with 5 worn brush tipped setae (Fig. 5e) and 3 curved falcate smooth spines (Fig. 5f), neurosetal capillaries present. Neurosetae anteriorly long thin narrow bladed capillaries, from setiger 11, one to two hooded strongly bidentate hooks (Fig. 5d) present and by setiger 13, hooks predominate. Notosetae all capillaries at least to setiger 23.

Comments: Boccardia fleckera n.sp. has been placed within the genus *Boccardia* even though it does not strictly agree with Blake & Kudenov's emended generic description in that the neuropodial hooded hooks begin on setiger 11 and not on setiger 7–8. Rainer (1973) erected the genus *Paraboccardia* for species with hooks commencing on setiger 8 which Read (1975) reduced to a subgenus. This was accepted by Blake & Kudenov (1978). Woodwick (1964) erected another genus in this complex *Tripolydora*, for species with hooks commencing on setiger 9. Blake & Woodwick (1981) have recently suggested that this genus is more closely related to the *Polydora* complex than to *Boccardia*. As we have only a single specimen we have decided to describe it as a new species within the genus *Boccardia*, as it clearly belongs to this complex from the modification of setiger 5 and the type of setae present.

Etymology: the specific name *fleckera* refers to the pigmentation pattern on the body.

Australian distribution: S.A. (Cape du Couedic, Kangaroo Island).

Habitat: Exposed algal holdfasts.

Boccardia proboscidea Hartman

Boccardia proboscidea Hartman, 1940: 382 Blake & Kudenov, 1978: 238; fig. 33a–c.

Material examined: S.A., 09A (W.19297), 09B (W.19296), many individuals at both sites.

Description: Prostomium rounded on anterior margin; caruncle extending to end of setiger 3,

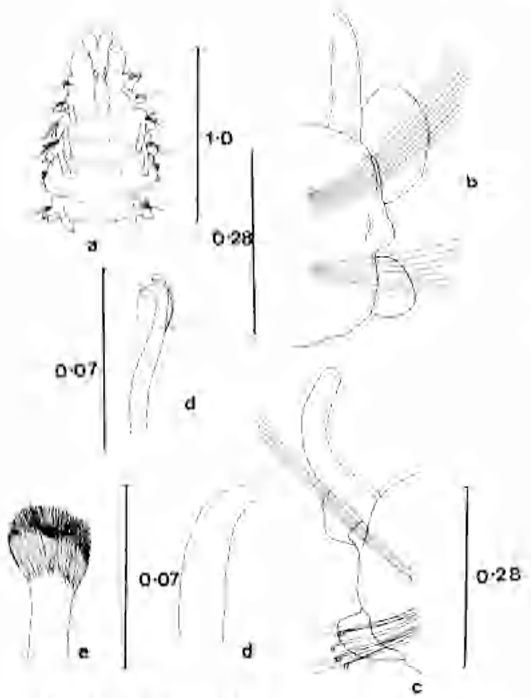

Fig. 5. *Boccardia fleckera* n.sp. a, anterior end, dorsal view. b, anterior of view of 4th parapodium. c, anterior view of 15th parapodium. d, neurosetal hook. e-f, modified setae of setiger 5. Scales in mm.

with two pairs of eyes. Branchiae from setiger 2, absent from posterior third of body. Setiger 5 with two types of setae: one type simple, falcate, weakly hooked with blunt tips, second type with broad asymetrical flattened head, slightly domed, densely bristled distally. Bidentate hooded hooks from setiger 7.

Comments: Our material agrees with the description of Blake & Kudenov (1978) who first reported this species from Australia in Port Phillip Bay, Victoria, the first record from the southern hemisphere. First record from South Australia.

Australian distribution: W.A. (Fremantle*), S.A. (Elliston*), Vic. (Port Phillip Bay).

Habitat: In amongst encrusting algae or *Galeolaria* worm tubes.

Polydora Bosc, emended Blake & Kudenov

Prostomium entire or divided, extending posteriorly as caruncle; eyes present or absent. Setiger 1 with or without notosetae. Setiger 5 greatly modified with major spines of one kind usually with slender companion setae, spines arranged in a singled curved row. Posterior notopodial spines sometimes present. Neuropodial hooded hooks bidentate beginning on setigers 7–17. Branchiae commencing posteriorly to setiger 5. Pygidium variable, reduced or enlarged, cuff-like, saucer-like or lobate.

Type species *Polydora cornuta* Bosc.

Polydora hoplura Claparède

Polydora hoplura Claparède, 1870: 58. Read, 1975: 411. Blake & Kudenov, 1978: 264, fig. 47.

Material examined: S.A. 17 (W.19298).

Description: Large species up to 40 mm in length for over 160 segments. Prostomium weakly incised, with caruncle extending to end of setiger 3, bearing low occipital tentacle. Setiger 1 with neurosetae; notosetae absent. Modified setae, setiger 5 blunt to pointed with subterminally lateral flange present, frequently resembling a tooth; companion setae bilimbate. Hooded hooks from setiger 7 with constricted shaft. Far posterior segments with large recurved dorsal spines directed toward midline of body. Branchiae from setiger 7, continuing along body until spine bearing region. Pygidium broad, flat, with deep ventral notch.

Comments: This species has been previously reported as forming mud blisters on oysters. In South Australia the species occurred amongst encrusting fauna on jetty piles. This is the first record from South Australia.

Australian distribution: S.A. (Rapid Bay*), Tas. (Simmons Beach), Vic. (Port Henry Pier, Corio Bay, Port Phillip Bay).

Habitat: In amongst sessile organisms on jetty piles.

Polydora ligni Webster

Polydora ligni Webster, 1879: 119. See Blake, 1971 and Foster, 1971 for synonymy.

Material examined: S.A. 12B, 5 (W.19299).

Description: Large specimen up to 32 mm length for 80 setigers. Prostomium bluntly bilobed with occipital tentacle. Two pairs of eyes. Setiger 1 without notosetae, digitiform notopodial lobe. Setiger 5, simple falcate major spines with blunt subdistal tooth; companion setae delicate, feathery; dorsal and ventral capillaries absent. Hooded hooks with constriction on shaft from setiger 7. Posterior modified setae absent. Branchiae from setiger 7.

Comments: First record from South Australia.

Australian distribution: S.A. (Torrens Island*), Vic. (Port Phillip Bay)

Habitat: Intertidal mudflats.

Polydora socialis (Schmarda)

Polydora socialis. Blake, 1971: 20–23, figs 13–14, 1979: 607–609 (synonymy); Blake & Kudenov, 1978: 248–250, fig. 38d–e.

Material examined: S.A. 02A, 5 (W. 19300), 02C, 2 (W.19301).

Description: Moderately sized individual up to 9 mm long and 0.75 mm wide for 55 setigers. Prostomium deeply incised, caruncle extending to setiger 4–5; occipital tentacle absent; with two pairs of eyes. Setiger 1 with notosetae. Major spines of setiger 5 simple, falcate with subterminal swelling. Neuropodial hooded hooks from setiger 7, without constriction on shaft. Modified posterior setae absent. Branchiae from setiger 8. Gizzard externally shown by dorsal swelling on setigers 18–19.

Comments: First record from South Australia.

Australian distribution: S.A. (Streaky Bay*), Vic. (Port Phillip Bay). N.S.W. (Botany Bay, Sydney Harbour).

Habitat: On mud flats, associated with clumps of mussels or *Posidonia* seagrass.

Pseudopolydora Czerniavsky emended Blake & Kudenov

Prostomium entire or divided, extending posteriorly as caruncle, occipital tentacle present or absent. Eyes present or absent. Setiger 1 usually reduced, with or without notosetae (and in some species without neurosetae if animals are reproducing asexually or regenerating). Setiger 5 not greatly modified with noto- and neuropodia often well developed bearing postsetal lobes, and spreading fascicles of capillaries, with curved row of heavy modified spines of 2 types or single type with companion setae; modified setae often arranged in J or U shaped setal group. Posterior notopodial spines sometimes present. Neuropodial hooded bidentate hooks from setiger 8. Branchiae present posteriorly to setiger 5. Pygidium variable, enlarged or reduced, collar like or divided into lobes or small lappets.

Type species *Pseudopolydora antennata* (Claparède).

Pseudopolydora antennata Claparède FIG. 6a–c.

Polydora (Pseudopolydora) antennata. Hartmann-Schröder, 1981: 50, figs 115–118.

Material examined: S.A. 16A, 1 (W.19386). 18A, 3 (W.19385). 20A, 6 (W.19387). 21A, 3 (W.19388). 27A, 1 (W.19384). N.S.W., Merimbula (W.11703). Qld. Moreton Bay, Jackson Creek (W.6042), Serpentine Creek (W.6043), Brisbane R. (W.7474).

Description: Colourless. Length up to 25 mm for 45 setigers, some complete individuals. Prostomium deeply incised, with lobes widely flaring. Occipital tentacle pointed erect, caruncle extending to middle of setiger 6. Two pairs of distinct eyes. Setiger 1 with small rounded notopodial lobe, notosetae absent (Fig. 6a). Setiger 5 poorly modified with 2 types of setae, arranged in J shaped row, outer row consisting of pennoned setae (Fig. 6b), (short spoon-like tips to blades) and inner row of simple spines, slightly curved apically and tips finely hirsute (Fig. 6c). Hooded bidentate neuropodial hooks from setiger 8, although in one specimen 2 hooks present on setiger 7, hooks immediately replace neurosetal capillaries. Branchiae present from setigers 7–22. Pygidium 2 semicircular valves.

Comments: This is the first record of this species from southern Australia, although Hartmann-Schröder has recently described it from Geraldton in Western Australia.

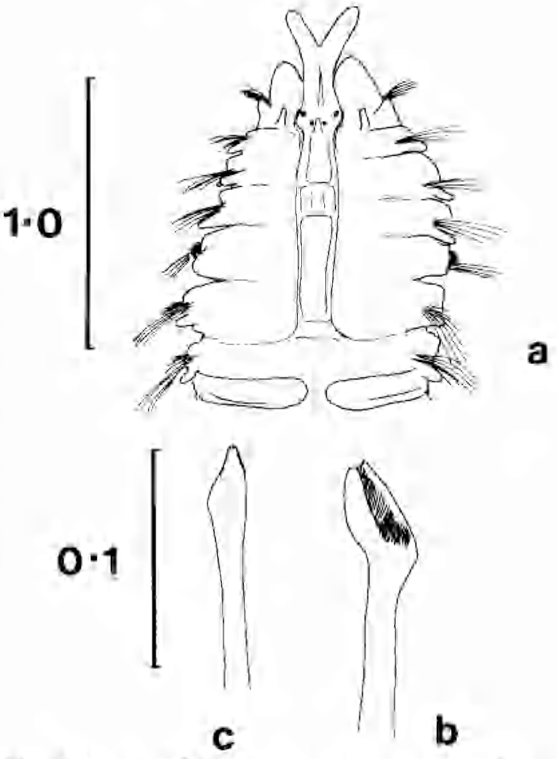

Fig. 6. *Pseudopolydora antennata* a, anterior view, dorsal view (W.19385). b–c, modified setae of setiger 5. Scales in mm.

Australian distribution: W.A. (Geraldton*), S.A. (Sellick's Beach, Victor Harbor, Kangaroo Island).

Habitat: Crevice fauna often associated with tufted algae.

Pseudopolydora paucibranchiata (Okuda)
FIG. 7a–e.

Polydora (Carazzia) paucibranchiata Okuda, 1937: 231–233, figs 11–12.

Pseudopolydora paucibranchiata. Blake & Kudenov, 1978: 268.

Pseudopolydora kempi. Hutchings & Rainer, 1979: 773–774. Not Southern.

Material examined: S.A. 11A, 1 (W.19393). 12A, 14 (W.19389, 19390). 12B, 1 (W.19391). 12C, 2 (W.19392). N.S.W. Botany Bay, Towra Beach (W.13045), Kurnell (W.17427). Jervis Bay (W.5223). Vic. Port Phillip Bay (NMV G3177, 3178, 3180), Hobsons Bay, Yarra River (NMV G3183), identified Blake & Kudenov.

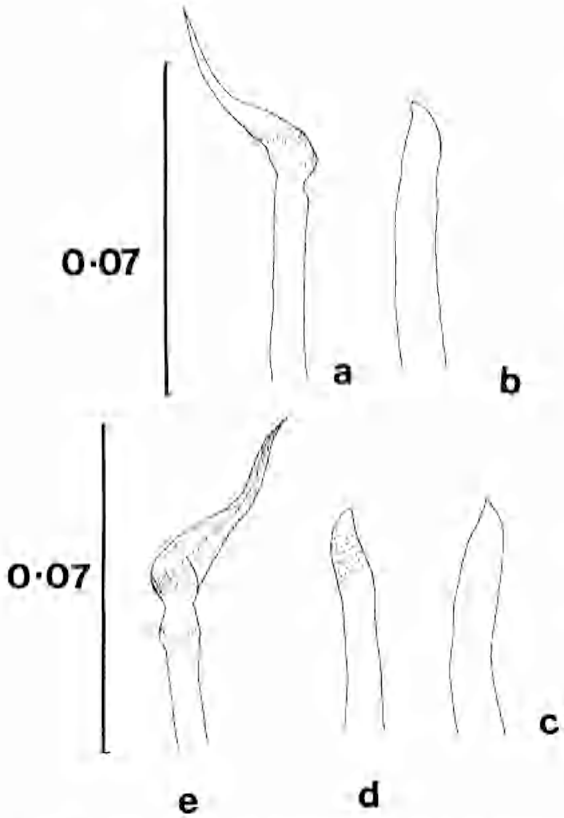

Fig. 7. *Pseudopolydora paucibranchiata* a–b. modified setae of setiger 5 (W.1727), S. Australian material. c–e. modified setae of setiger 5 (NMV G3183, NMV G3180) Victorian material. Scales in mm.

Description: Small individuals 3–5 mm in length, 0.5–1 mm in width. Prostomium entire, caruncle to posterior margin of setiger 3, occipital tentacle short. Palps to setiger 13–18, extending approximately quarter of length of body. Branchiae from setiger 7 extending to setiger 20–22. Notosetae absent on setiger 1. Setiger 5 barely modified, with simple falcate spines (Fig. 7b) and curved pennoned spines, arranged in U shaped line (Fig. 7c). Hooded neuropodial hooks from setiger 8, bidentate, completely replacing neuropodial capillaries. Pygidium a small flaring cup.

Comments: The South Australian material differs from the description of Blake & Kudenov in the number of branchiferous segments and relative lengths of the palps. Examination of this material, much of which is in poor condition indicates that the gills extend only to setiger 21–23, and not to setiger 35 as quoted by Blake & Kudenov, and this even for gravid females (NMV G3183).

Blake & Kudenov's material exhibits far greater variation in the shape of modified setae on setiger 5 (Fig. 7c–e) than exhibited by the South Australian material (Fig. 7a–b).

The type of *Pseudopolydora paucibranchiata* was destroyed during the Second World War. However material from the type locality should be examined to check the apparent wide distribution throughout the Pacific.

Australian distribution: S.A. (Porter Bay*, Torrens Island*) Vic. (Port Phillip Bay, Westernport Bay) N.S.W. (Jervis Bay, Botany Bay).

Habitat: Mudflats and seagrass beds.

Pseudopolydora sp. 1
FIG. 8a–c.

Material examined: S.A., 12A, 2 (W.19397). 12B, many (W.19398). 12C, 2 (W.19399). All posteriorly incomplete specimens.

Description: Colourless. Prostomium deeply incised, lobes widely flaring; small caruncle extends to posterior margin of setiger 3–4. Two pairs of eyes. Occipital tentacle absent. Setiger 1 without notosetae. Setiger 5 moderately modified, modified setae arranged in tight U, of 2 types, simple falcate spines (Fig. 8a) about 6, and pennoned spines (8), with 2 longitudinal ridges about concavity, dorsally finely hirsute (Fig. 8b–c). Hooded bidentate neurosetal hooks from setiger 8, in groups of about 13. Branchiae from setiger 7 to about setiger 25.

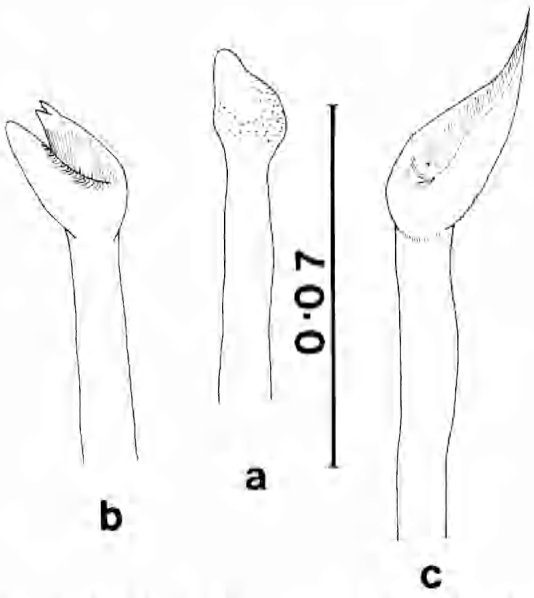

Fig. 8. *Pseudopolydora* sp. 1 a–c modified setae of setiger 5 (W.19398). Scales in mm.

Comments: This species differs from both *Pseudopolydora antennata* and *P. paucibranchiata* which occur in South Australia, and also differs from other described species from SE Australia. *Pseudopolydora* sp. 1 differs from these other described from SE Australia, *P. kempi* (Southern, 1921), *P. glandulosa* Blake & Kudenov, 1978, *P. stolonifera* Blake & Kudenov, 1978 and *P. prolifera* (Augener, 1914) in the type and ornamentation of the modified setae on setiger 5. It probably represents an undescribed species, but we have only incomplete specimens and as the genus we believe is in need of a re-evaluation we have decided not to describe another new species.

Habitat: This species occurs around Torrens Island Power Station, both in the thermally polluted areas where temperatures may exceed 40 °C and in the non thermally polluted areas.

Pseudopolydora sp. 2
FIG. 9a–b.

Material examined: S.A., 12C, 1 (W.194034).

Descriptions Colourless. Entire specimen, 57 setigers. Prostomium entire, rounded. Eye spots present, caruncle and occipital tentacle present but damaged; setiger 1 small, lacking notosetae. Setiger 5 barely modified not enlarged, modified setae arranged in small U shaped group, consisting of numerous fine pennoned (Fig. 9b) and falcate spines (Fig. 9a). Hooded multidentate neurosetal hooks from setiger 7 and unidentate notosetal hooks from setiger 14, immediately completely replacing capillaries. Multidentate hooks with a group of small denticles closely above main fang, numbers of teeth cannot be determined. Branchiae from setigers 7–24. Pygidium, an anal collar, notched dorsally.

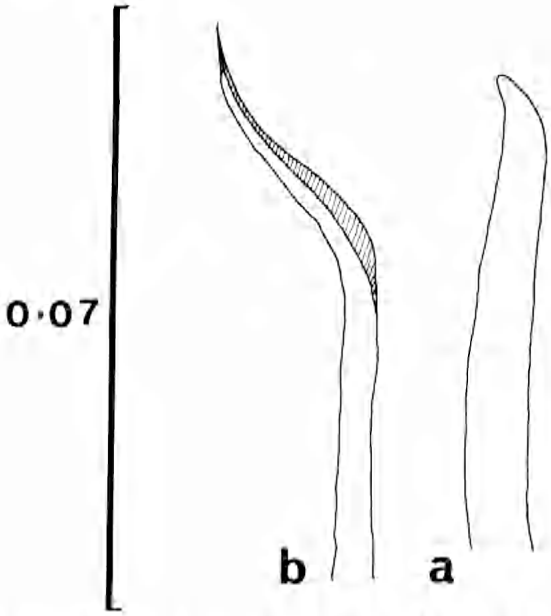

Fig. 9. *Pseudopolydora* sp. 2 a–b modified setae of setiger 5. Scales in mm.

Comments: This species clearly differs from *P. antennata* or *P. pseudopolydora* as identified by us. As there appears to be some confusion within this genus and we have only a single specimen, we have decided to just refer it to genus, although it clearly differs from all species of this genus currently described from Australia. We are also reluctant to decribe a new species on a poorly preserved single specimen.

Habitat: Mud flats.

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